APPENDIX A: DETAILS OF PAN-STARSS1 FIELDS

Table A gives a summary of the Pan-STARRS1 observations. Table A2 gives the RA of the proximity to twilight for each filter used to survey the sky probability maps. This lists the maximum RA accessible in each filter for the date given when the sub us 16 degrees below the horizon (for $g_{\rm P1}r_{\rm P1}i_{\rm P1}$), 14 degrees below (for $z_{\rm P1}$) and 10 degrees below (for $y_{\rm P1}$). This is indicated in the plots in Figure 1 as vertical lines for the $i_{\rm P1}$filter.

Table A1. Summary of Pan-STARRS1 observations

Date	MJD	Filters	Exposure Times (sec)	Number of PS1 Exposures
20150917	57282	$i_{\rm P1}z_{\rm P1}y_{\rm P1}$	45,60	34
20150919	57284	$i_{\rm P1}z_{\rm P1}y_{\rm P1}$	20,23,35	59
20150922	57287	$i_{\rm P1}z_{\rm P1}y_{\rm P1}$	40,45,68	45
20150923	57288	$i_{\rm P1}z_{\rm P1}y_{\rm P1}$	25,30,37	49
20150924	57289	$i_{\rm P1}z_{\rm P1}y_{\rm P1}$	30,45	45
20150925	57290	$i_{\rm P1}z_{\rm P1}y_{\rm P1}$	30,45	44
20150927	57292	$i_{\rm P1}$	35	4
20151002	57297	$i_{\rm P1}z_{\rm P1}y_{\rm P1}$	25,35	57
20151003	57298	$i_{\rm P1}z_{\rm P1}y_{\rm P1}$	25,40	65
20151013	57308	$i_{\rm P1}z_{\rm P1}y_{\rm P1}$	25,35	88
20151014	57309	$i_{\rm P1}z_{\rm P1}y_{\rm P1}$	30,60	77
20151015	57310	$i_{\rm P1}r_{\rm P1}z_{\rm P1}y_{\rm P1}$	30,60,200	72
20151017	57312	$i_{\rm P1}$	60	5
20151018	57313	$i_{\rm P1}r_{\rm P1}z_{\rm P1}y_{\rm P1}$	30,80,200	70
20151019	57314	$i_{\rm P1}r_{\rm P1}z_{\rm P1}y_{\rm P1}$	35,200	22
20151021	57316	$i_{\rm P1}r_{\rm P1}z_{\rm P1}y_{\rm P1}$	30,45,50,200	98
20151022	57317	$i_{\rm P1}r_{\rm P1}z_{\rm P1}y_{\rm P1}$	30,45,60,200	79
20151023	57318	$i_{\rm P1}r_{\rm P1}z_{\rm P1}y_{\rm P1}$	30,60,65,200	87
20151024	57319	$i_{\rm P1}r_{\rm P1}z_{\rm P1}y_{\rm P1}$	30,45,200	102
20151025	57320	$i_{\rm P1}r_{\rm P1}z_{\rm P1}y_{\rm P1}$	30,60,65,200	90
20151026	57321	$i_{\rm P1}r_{\rm P1}z_{\rm P1}$	35,50,60,200	64

Table A2. Proximity to twilght of Pan-STARRS1 fields

Date	Plot	LST of twilight			RA of an HA = 4.5 hrs at twilight		
		16 deg	14 deg	10 deg			
		$i_{\rm P1}$-band	$z_{\rm P1}$-band	$y_{\rm P1}$-band	$i_{\rm P1}$-band	$z_{\rm P1}$-band	$y_{\rm P1}$-band
17 Sept	first 3 days	04:27	04:36	04:53	08:57 134.25	09:06 136.50	09:23 140.75
27 Sept	3-10 days	05:09	05:18	05:35	09:39 144.75	09:48 147.00	10:05 151.25
4 Oct	10-17 days	05:39	05:47	06:05	10:09 152.25	10:17 154.25	10:35 158.75
11 Oct	17-24 days	06:08	06:17	06:34	10:38 159.50	10:47 161.75	11:04 166.00
18 Oct	24-31 days	06:38	06:47	07:04	11:08 167.0	11:17 169.25	11:34 173.50
25 Oct	$>$ 31 days	07:08	07:17	07:34	11:38 174.5	11:47 176.75	12:04 181.00